#### FAQ Alkalihalobacillus (Bacillus) clausii bacteraemia

#### 1. What is Alkalihalobacillus clausii?

Alkalihalobacillus clausii (A. clausii), formerly known as Bacillus clausii, has been reclassified as a result of genomic studies. It is a gram-positive, spore-forming, motile, rod-shaped bacterium. It is considered a good bacterium and thus widely used as a probiotic in various gastrointestinal conditions such as diarrhoea and adverse effects from antibiotic use, to maintain gut health.

## 2. What is Alkalihalobacillus clausii bacteraemia?

Presence of A. *clausii* in the bloodstream is called bacteraemia. A. *clausii* is generally considered safe, especially for individuals with well-functioning immune systems, but can sometimes cause infection, particularly in patients with weak immune systems by entering the bloodstream.

## 3. Who is at risk of getting Alkalihalobacillus clausii bacteraemia?

This is a rare infection however probiotic use in vulnerable persons, immunocompromised individuals (e.g., cancer, organ transplant, or HIV/AIDS) may lead to its development. Patients with central venous catheters, prolonged hospitalization or intensive care stays are also at risk. Young children and new born babies are at risk due to their under-developed immune systems. Currently, there is no specific data available on the prevalence of *Bacillus clausii* bacteraemia in South Africa.

# 4. What is the clinical presentation in Alkalihalobacillus clausii bacteraemia?

The clinical presentation is non-specific, requiring the clinician to rule out other potential causes, especially in patients with a history of probiotic use. Common signs and symptoms include fever, increased heart rate, and systemic indicators of infection such as sweating and general body weakness. In severe cases, the infection can progress to sepsis, with patients presenting with altered mental status and multi-organ dysfunction.

## 5. How is Alkalihalobacillus clausii bacteraemia diagnosed?

Bacteraemia is typically diagnosed by collecting a blood sample into a blood culture bottle, which is then sent to the laboratory, where the growth of

**Alkalihalobacillus** clausii will be detected. Many Bacillus species can be detected as contaminants in blood culture bottles with potential sources being skin flora, environmental bacteria, and laboratory errors; therefore, it is crucial to exclude these before attributing the bacteraemia to probiotic use.

# 6. How is Alkalihalobacillus clausii bacteraemia treated?

Immediate discontinuation of probiotic therapy if it is being used by the affected individual. Administration of antibiotics, commonly vancomycin, or other agents depending on susceptibility testing and supportive care in cases of severe sepsis.

## 7. How is Alkalihalobacillus clausii bacteraemia prevented?

Preventative measures include avoiding probiotic use in immunocompromised patients, proper sterilization of medical equipment and monitoring for signs of infection in at-risk individuals.

## 8. Are there safe probiotics to use in immunocompromised individuals?

Probiotic use in these individuals needs careful consideration of the benefits versus the risks. The treating clinician must perform vigilant monitoring of signs of infection and adverse reactions when including probiotics in immunocompromised individuals.

#### 9. Where can I get more information?

For clinical or medical enquiries, call the NICD hotline +27 82 8839920 (Healthcare professionals only)

Centre for Healthcare-Associated Infections, Antimicrobial Resistance and Mycoses (CHARM), National institute for Communicable Diseases (NICD) +27 11 386 6278

NICD website website: <u>https://www.nicd.ac.za/diseases-a-z-index/alkalihalobacillus-bacillus-clausii-bacteraemia/</u>